

Sputtering of Lunar Regolith by Solar Wind Protons and Heavy Ions, and General Aspects of Potential Sputtering

S.T. ALNUSSIRAT, The University of Alabama in Huntsville

M.S. SABRA, NASA Postdoctoral Program Fellow, Marshall Space Flight Center, Huntsville, AL 35805

A.F. BARGHOUTY, Astrophysics Office, NASA-Marshall Space Flight Center, Huntsville, AL 35812

DOUGLAS L. RICKMAN, NASA, Marshall Space Flight Center, Huntsville AL 35812

F. MEYER, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831

New simulation results for the sputtering of lunar soil surface by solar-wind protons and heavy ions will be presented. Previous simulation results showed that the sputtering process has significant effects and plays an important role in changing the surface chemical composition, setting the erosion rate and the sputtering process timescale. In this new work and in light of recent data, we briefly present some theoretical models which have been developed to describe the sputtering process and compare their results with recent calculation to investigate and differentiate the roles and the contributions of potential (or electrodynamic) sputtering from the standard (or kinetic) sputtering.

The American Physical Society (APS) April Meeting 2014

Savannah, GA

March 5-8, 2014